Integrating Social Tagging and Document Annotation for Content Based Search in Multimedia Data

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Integrating Social Tagging and Document Annotation for Content Based Search in Multimedia Data

- **Searching Multimedia**
  - keyword based search
  - keyword generation
    - manual
    - automatic
  - keywords provided by
    - resource author
    - expert
    - non-expert (all others)

↓

collaborative tagging

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- **Searching Multimedia**
  - keyword stands for entire resource
  - but, what if you are only interested in a small part of the resource ?

e.g. recorded lecture
- duration ~90 minutes
- interesting parts ~5 minutes

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- **Lecture Recording**
  - **Media-Streaming**
    - synchronized video and desktop recording with navigation
    - encoded with SMIL or MPEG 4

camera **video**

vga capture card **desktop**

interactive table of contents (post processing)

SMIL/MPEG4 encoding

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- **Manual Annotation of Recorded Lectures**

time line

0:00:00.0 | **0:03:42.2** | **0:05:11.3** | **0:13:06.0**

user provided annotation

- welcome address
- short repetition of previous lecture

- speech
- development of speech
- hominids
- primates
- …

- writing
- pictogram
- ideogram
- phonogram
- …

- writing
- hieroglyphes
- cuneiform
- …

MPEG 7 encoded annotation

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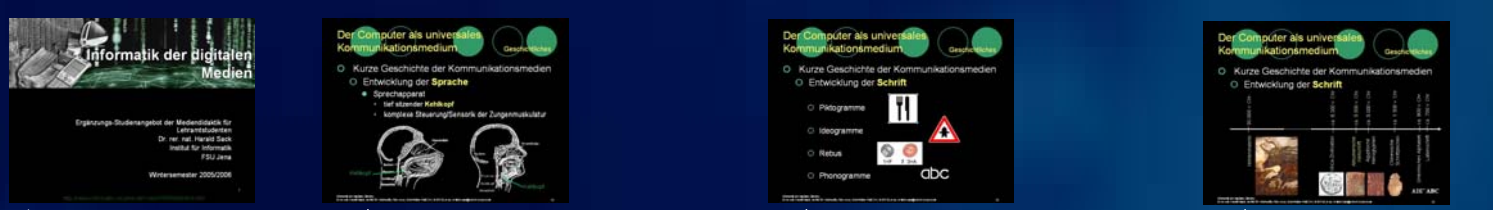
- **Automatic Annotation of Recorded Lectures**
  - use all available resources:
    - video recording, desktop recording, **presentation slides**, audio recording, …



annotation generated from desktop presentation

0:00:00.0	0:03:42.2	0:05:11.3	0:13:06.0
• lecture title • author name • …	• speech • development of speech • hominids • primates • …	• writing • pictogram • ideogram • phonogram • …	• writing • hieroglyphes • cuneiform • …

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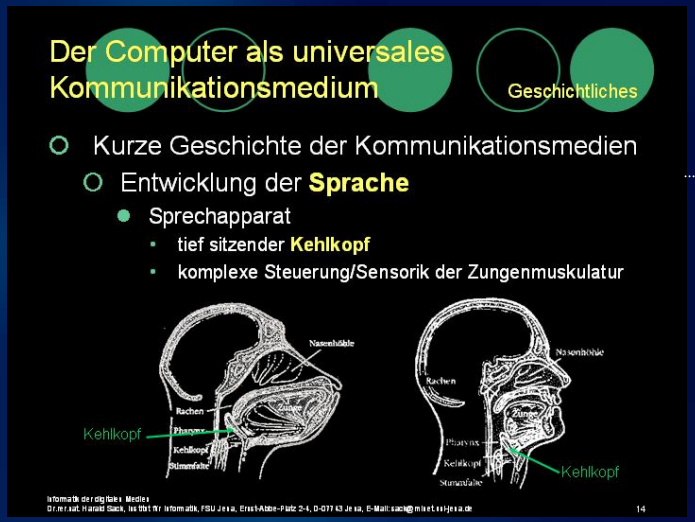
- **Automatic Annotation of Recorded Lectures**
  - from presentation to annotation

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…
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  <FreeTextAnnotation> The Computer as Universal
     Communication Medium
  </FreeTextAnnotation>
 </TextAnnotation>
 …..
 <MediaTime>
  <MediaTimePoint> T00:03:42.2 </MediaTimePoint>
  <MediaDuration> PT1M28.6S </MediaDuration>
 </MediaTime>
 ….
```

MPEG7
Scene Description

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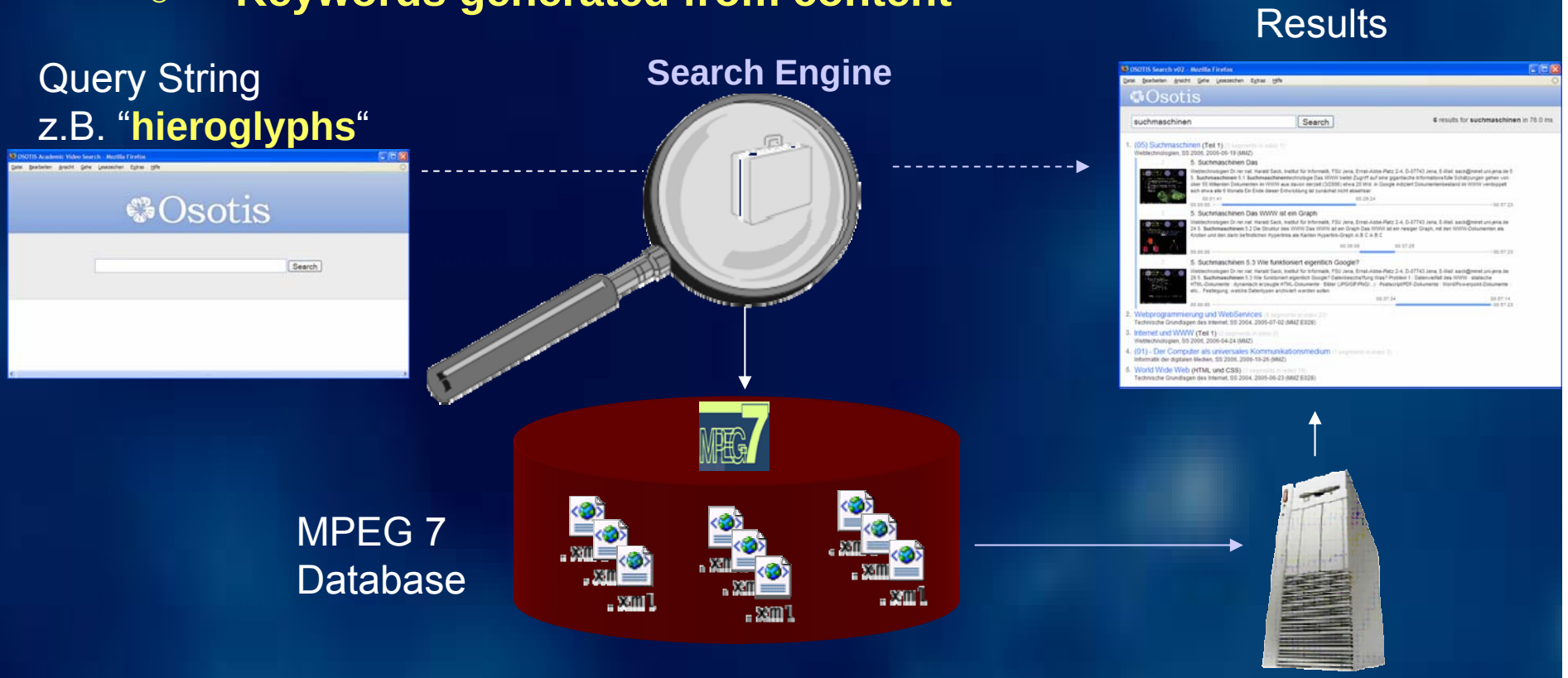
- **Searching Multimedia Lectures**
  - **Keywords generated from content**



Sack, Waitelonis, MTG 2006

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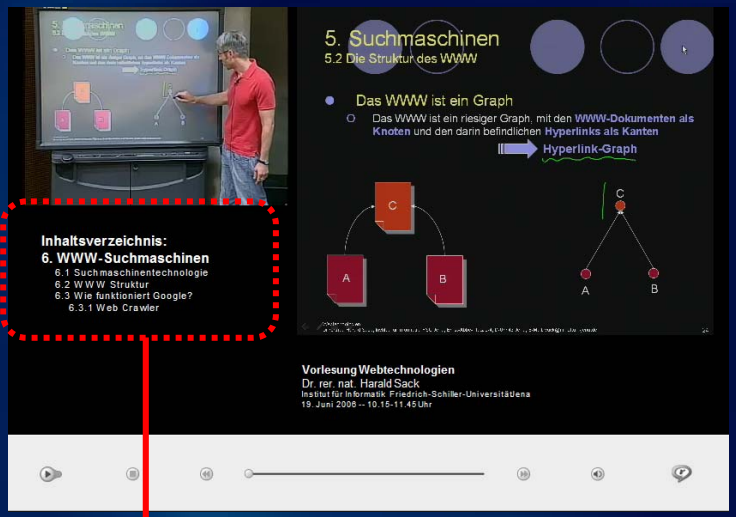
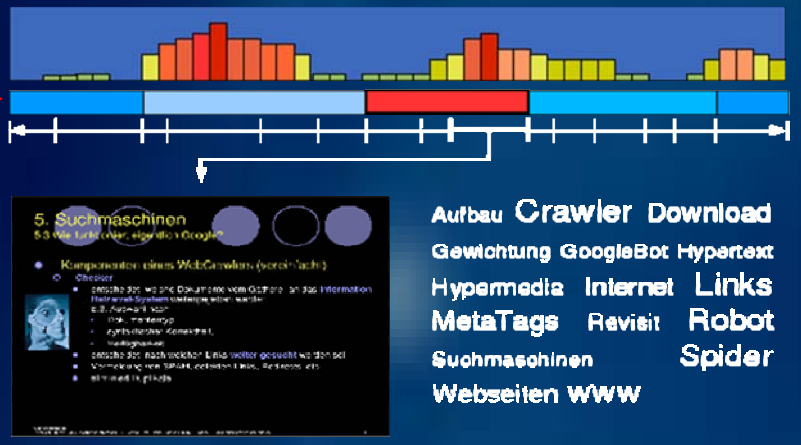
- **Collaborative Annotation of Video Segments**
  - **Prerequisites**
    - keep user interface as simple as possible (!)
  - **Annotation of entire resource**
    - similar as existing social tagging systems
  - **Annotation of partial resources**
    - one-button solution: pressing button during replay marks **predefined video segment** that can be tagged
    - predefined segmentation:
      - each **slide** defines a new video segment (fine)
      - if available, use **table of contents** for segment definition

Integrating Social Tagging and Document Annotation for Content Based Search in Multimedia Data

- **Collaborative Lecture Annotation**
  - **Annotation of partial resources**
    - video segmentation: - each **slide** defines a new video segment (fine grain segmentation)
      - if available, use **table of contents** for segment definition





segments defined by TOC

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- **Collaborative Lecture Annotation**
  - **Annotation of partial resources**
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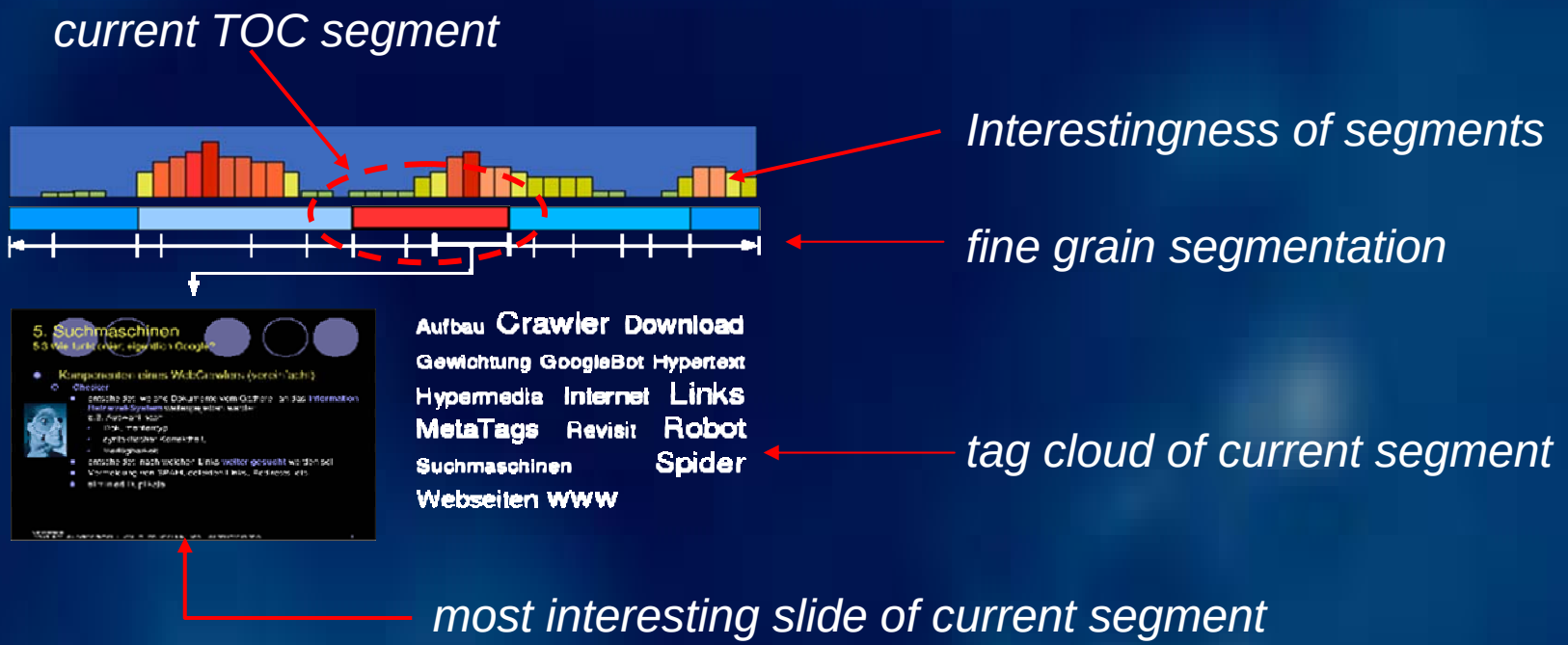

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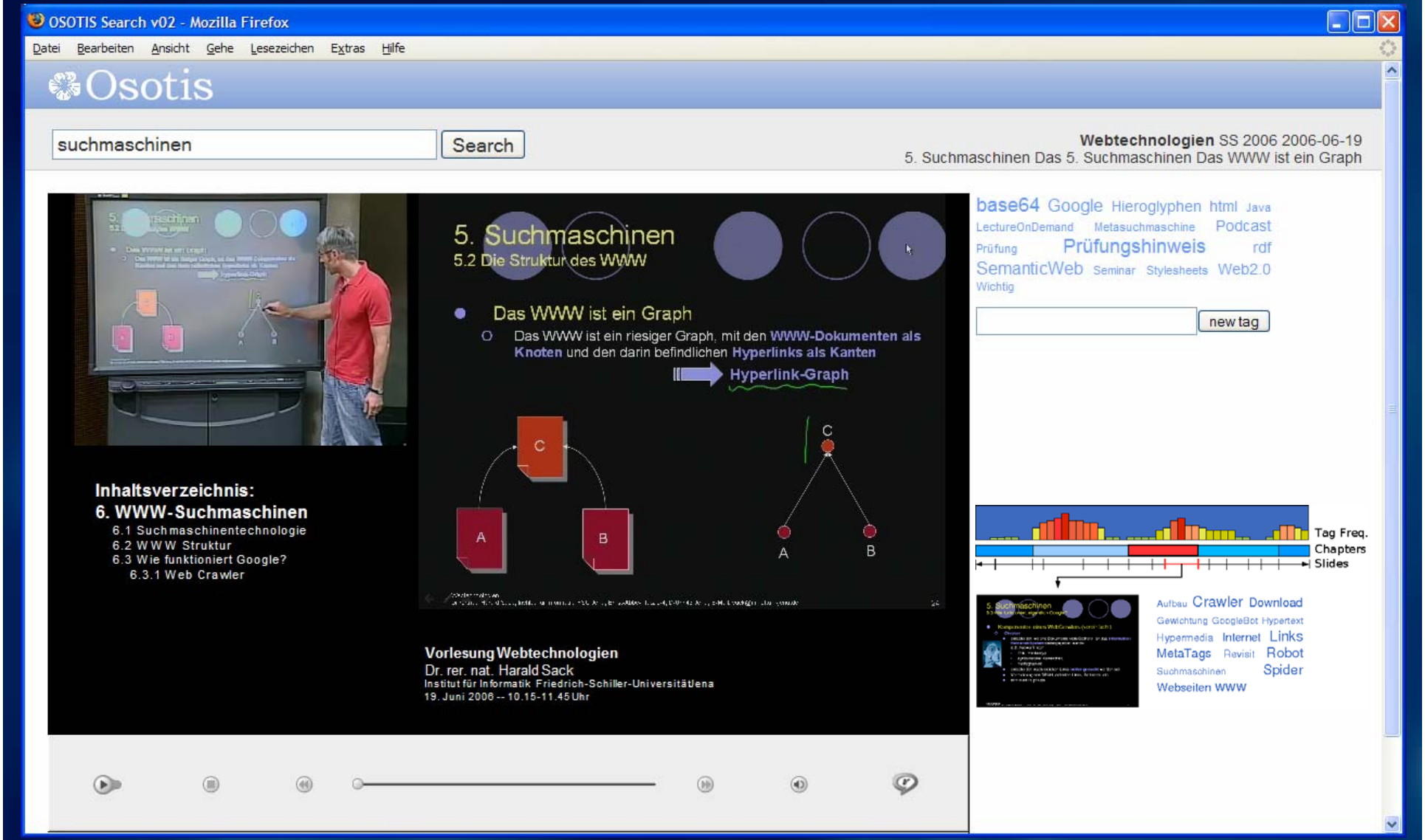

- **Prototype available at**

  `http://osotis-base1.inf-ra.uni-jena.de:8180/Osotis/`

Thank you for your attention!